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Report to the Joint Intergovernmental Regional Committee on Human Settlements and Environment on the Regional Project for the Development of Building Materials Industries in Africa

INTRODUCTION

1. The present document has been prepared in line with the ECA 1990-1991 work programme "Human Settlements in Africa" (Programme element 2.2: Building Materials) to report to the Joint Intergovernmental Regional Committee on Human Settlements and Environment which will offer African governments the opportunity to review, examine, update and approve the programme and subsequently provide recommendations to the ECA Conference of Ministers.

2. Phenomenal population increases, unprecedented urbanization, economic and social crisis in Africa have had devastating impacts on shelter programmes and strategies. A particular problem facing African region is posed by the large number of homeless and of those living in extremely poor shelter and unhealthy neighbourhoods, whether in urban slums and squatter areas or in poor rural areas. Estimates indicate that in many cities of Africa, 40 to 85 per cent of inhabitants are living in slums and informal settlements. While the scale of shelter needs has already reached disturbing dimensions in the towns and cities of African region, the situation in rural areas is often even worse. Some 42 per cent of rural and 35 per cent of urban dwellings in Africa are single rooms, and their average density of occupation is calculated at 2.23 persons.

3. When declining per capita GNP, runaway inflation, spiraling unemployment, severe financial constraints, very high levels of external debt, demographic and urbanization trends are imposed upon the present shelter situation and the conditions that prevail in cities, towns, and villages of Africa, the magnitude of the regional problem, the sheer size of the challenge threaten to become unmanageable. Such problem demands deliberate decisions that must be addressed at the level of nations' policy formulation and implementation in the area of the production, delivery and improvement of shelter for all, but with particular emphasis on meeting the needs of the poor and disadvantaged.

4. A key component for the production and improvement of shelter are building materials, which constitute the single largest input to construction accounting for about 50 to 80 per cent of the total value of construction and being directly related to the basic need of acquiring adequate housing. The provision of building materials and construction methods of a cost and quality bringing adequate housing within the reach of the greatest possible numbers of urban and rural population in Africa calls for fostering an indigenous capacity for a self-sustaining growth, leading to self-reliance in the shelter sector before the year 2000.

Basic Data on the Regional Project

5. The "Lagos Plan of Action for the Economic Development of Africa, 1980-2000" established region's primary objective as the alleviation of mass poverty and improvement in the people's standard of living. A second,

closely related objective, was attainment of self-sustained development. Thirdly, the Lagos Plan established the objective of national and regional collective self-reliance. Within this broad framework, the Plan outlined steps to be taken to strengthen agriculture, industry, transport and other sectors, as well as protection of the environment and advancement of the role of women in the development process.

6. As a part of actions set out in the Lagos Plan of Action, ECA designed and implemented in 1978-1983 with the assistance of UNDP and other interested agencies the programme for the development of building materials industries in Africa. The programme made it possible to provide considerable assistance to African countries in the following fields:

a) Establishing a mechanism at the national and subregional levels for policy and strategy formulation;
b) Decentralising production and diversifying the range of materials;
c) Encouraging the integration of research programmes in the formulation of building acts, regulations and codes, as well as in building design and technologies;
d) Promoting research in up-grading indigenous building materials and technologies, developing innovative technologies which are consistent with the resource capacities of most developing countries, establishing co-operation between producers and consumers of building materials;
e) Strengthening national capabilities for the dissemination of information and preparing directories of African experts and researchers and of specialized African research centres.

7. The implementation of the programme in 1978-1983 identified the following constraints in building materials sector of African countries:

a) Research efforts have not led to wide-scale adoption of findings, so that they have had little impact on the development of the construction sector;
b) There is little or no exchange of research information among the various research institutions of the region and as a result, they do not explore avenues for gains from each other findings;
c) There is no information flow between research institutions and users/developers;
d) Because of high cost of key production factors (machinery, energy and transportation), abundance of unskilled and semi-skilled labour, difficulties in assessing the feasibility of raw materials, limited size of markets there is a need to re-examine the advantages of decentralized production at medium and small-scale levels over large-scale production units;
e) Even when materials have been developed at the laboratory stage, the corresponding testing and standardization procedures are not available;
f) Walling and roofing materials constitute the main building materials requirements of the low-income population of the region and should therefore be given high priority in their development in future;

g) Participation of women in building materials production is low;

8. The above findings provided a clear direction which should be followed to resolve the problems of the building materials sector:

a) A decentralized production at medium-and small-scale levels of walling and roofing materials are of utmost importance to the shelter requirements of the poor and underprivileged. The relative advantages of medium-and small-scale production include: effectiveness in capacity utilization, import substitution, utilization of small deposits, minimal investment capital requirements, incentives to local enterpreneurship, employment creation at local levels, low transport costs, energy saving, reduction of the migration pressures on the largest cities, a boost to rural transformation and increased involvement of women in the production process;
b) The stock of useful research findings already exists at research institutions in the region and can contribute to the development of building materials and construction if measures are taken to disseminate the information among research institutions of the African region;
c) An inventory of raw materials availability could be used in the manufacturing of local building materials provided that member States would bear little or no expenses for its establishment.

9. In 1987, UNDP provided funds under project RAF/87/010 for ECA as the executing agency to undertake preparatory activities for the formulation of a comprehensive project aimed at implementing programmes on development of local building materials. The outputs of the activities implemented under this preparatory assistance were focused on:

a) An assessment of the state of the art of selected building materials and the capacities of research and development institutions as well as that of small-scale enterprises in Africa;
b) Identification of physical, socio-economic and cultural constraints to the development and utilization of locally produced building materials;
c) Co-ordination arrangements with other UN agencies, IGOs, NGOs, aid agencies and national research and development institutions in the field;
d) Formulation of an approach to the establishment of co-operation arrangement for the establishment of a regional data base and programme on locally produced building materials;
e) Formulation of a document on a large-scale project for the development and utilization of locally produced building materials in Africa.

10. Through the preparatory activities intensive field investigations were carried out in at least 10 member States and all these confirmed the worsening of the building materials sector and the urgent need for solutions towards adequate supplies of affordable building materials.

The findings of the preparatory assistance project have further emphasized the need for a regional approach to the development of building materials industry. Close co-operation among African countries and institutions working on such matters as the sharing of research findings, the development of relevant tools and equipment and training was recognized more cost effective and expeditions.

11. On the basis of the preparatory assistance project ECA formulated a draft project proposal on pilot production units for the fabrication of soil stabilized blocks, burnt bricks and tiles, lime and fibre concrete tiles. The initial draft proposal estimated UNDP inputs of about U.S. $6.5 million for 21 countries, which had agreed to implement a pilot project. Subsequently, after having received the comments from UNDP, the total amount of funding and the number of countries were reduced to U.S. $3.6 million and 15 respectively. The next and final revision of the draft proposal resulted in drastic cuts in UNDP allocations for the project and the funds available amounted only to US$ 344,000. Thus, resources fell far short of actual demand and under those circumstances it was possible to provide inputs only for 4 countries, even if project activities were limited to only the production of soil stabilized blocks, lime and fibre concrete roofing tiles.

12. The objectives, outputs and activities of the project "Pilot production units for the fabrication of soil stabilized blocks, fibre concret roofing tiles and lime" are closely linked to basic regional programmes such as the Lagos Plan of Action and the African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation, the Second Industrial Development Decade for Africa, resolutions and declarations by regional and international organizations over the past few years including Resolution 573 (XXI) on Human Settlements adopted by the ECA Conference of Ministers in Yaounde, 1986 and The Programme of Action for the development of Building Materials Sector in Africa to the Year 2000, adopted by the High Level Meeting on the Development of Building Materials in Africa, Addis Ababa, April 1988. The Global Strategy for Shelter to the Year 2000 has provided a useful framework for the project in terms of guidelines for national and international actions in the field of building materials and technology.

13. Project document RAF/90 provides that during one year pilot production plants will be set up to demonstrate the viability of the commercial manufacture and utilization of:

a) Soil Stabilised Blocks in Senegal;
b) Fibre concret roofing tiles in Cameroon and Guinea;
c) Lime in Uganda

The extent of raw materials available at an appropriate rate will be determined by means of existing geological surveys and additional investigation as may be required. The quality of raw materials will also be determined by laboratory and field tests. During the trial production of the materials quality control tests will be carried out on the finisned

products and manufacturing process adjusted as need be once the production technique has been perfected, the material will be continuously produced by the production plant for demonstration and training purpose. Building materials producers from other African countries will attend training courses at and demonstration visits to their respective pilot production unit.

14. As the Executing Agency ECA will:

a) Identify local experts and international consultants for the establishment of pilot production plants;

b) Select appropriate and proven technology for each material by country in collaboration with national research and development institutions as well as with relevant ministries;

c) Draw up specifications for appropriate equipment required for setting up the pilot production plants and arrange for the procurement of the necessary equipment. Since the project will require external financial and other resources, ECA will endeavour to mobilize such resources from interested donor countries and agencies and will assist the project by negotiating appropriate agreements with other organizations and institutions involved in the implementation of the project. It will also negotiate co-operation arrangements with centres or institutions within and outside the African region involved in research and development of building materials with a view to benefitting from their research and development experiences and findings.

15. UNDP funding will cover the following basic project expenditures:

a) Local experts recruitment (one expert for each participating country for the duration of the project - 12/m/m) who will be responsible for site organization, installation of equipment and day to day follow-up activities involved in the establishment of the pilot production plants, co-ordination and monitoring of projects in their respective country and reporting to the Executing Agency;

b) International consultants recruitment (one each for lime and stabilized soil blocks and two for fibre concrete roofing tiles) for 6 m/m to assist in design, installation and fabrication of four production plants;

c) Equipment and supplies for the establishment of pilot projects in four countries (US$ 120,000). These include eight sets of soil block presses and accessories, four sets of vibrating tables and moulds for fibre concrete tiles along with materials and labour for the construction or modification of a lime kiln;

d) Raw materials investigation (US$ 3,000).

16. Government institutions will be directly involved in the implementation of the project and will be responsible for facilitating local arrangements relating to the location of pilot projects and will provide incentives and will create necessary institutional mechanisms for the promotion of production and utilisation of locally produced building materials by the informal sector.

17. The project establishes measures for moving from the over-emphasis on laboratory research alone to pilot production, testing, training and demonstration in order to bridge the gap between research, development and utilization and to achieve the numerous benefits which are likely to be derived from bringing independent and fragmented components of the construction industry into comprehensive manner and harmony. The projects stimulates local experts recruitment to move away from reliance on consultants offered by developed countries and strengthen African own capacities to provide construction sector with local resources factors. This approach would promote an exchange of staff to participate in relevant african projects of mutual benefits.

Key issues outside the scope of the project

18. The project does not cover the whole range of strategic local building materials required, standards and codes of practice, architecture and building design, builders, contractor and shelter-related entrepreneurs training, building legislation, finance and credit mechanisms, measures to promote demand for output of the informal construction sector, incentives for private sector production, promotion of local manufacture of equipment. The full coverage of the above issues will require additional funding which is not yet available.

19. In many African countries efforts have been made at promoting local building materials. Most of these efforts have failed, because their commercial-scale adoption is hindered by the fact that they have not been incorporated in building codes, the type of production technologies was not consistent with the resource constraints of developing economies, cost efficiency in construction and durability of building materials could not be achieved without promoting appropriate construction techniques. The extensive use in the construction industry of foreign-derived standards and codes leads to excessive dependence on imported materials and construction techniques. The formulation of building standards and codes is a "highest-priority" activities for regional programme. The adoption of these standards in tender or contract documents will create an opportunity for expanded production of indigenous building materials. Standards and regulations, if appropriately formulated can bring about reduction in high cost of construction, particularly for the low-income population, facilitate subregional marketing of products and components.

20. Materials and architectural styles are organically interrelated. The importance of local and regional identity has been underestimated. International co-operation may involve the transfer of national and regional building styles.

21. Resources required for training of construction manpower at local level have not been mobilized and used to achieve the desired objectives. Indigenous contractors in most African countries experience difficulties in handling local building materials and finances. In addition to national policies to minimize these deficiencies regional programme should

concentrate on promoting collaboration among African countries on matters related to the training of construction manpower and contractors for indigenous construction sector.

22. In African countries national and municipal legislation has introduced limitations on use of local building materials and access to exploitable raw materials. The problem can be reduced through regional programme of co-operation, especially countries that experience similar difficulties in streamlining legislative procedures in order to put an end to bureaucratic constraints and improve the capabilities of indigenous construction sector.

23. In most African countries existing financial institutions are not able to meet the requirements of the informal sector. International efforts need to be focused on strengthening regional capabilities in establishment of regional, subregional and bilateral specialized financial institutions geared to the needs of the informal construction sector on bilateral or multilateral basis in order to reduce constraints caused by a shortage of foreign exchange to purchase machinery, equipment and other critical inputs. Regional programme could also explore its advantages in facilitating the flow of information on strengthening or establishment of specialized financial institutions such as rural savings and credit agencies, co-operative banks, building societies easily accessible to a majority of participants to ensure access to credit and capital of producers of building materials especially for new investors seeking to commercialize innovations.

24. African governments have a key role in creating demand for output of the informal construction sector, both direct demand for indigenous building materials for government construction projects, for implementing appropriate housing policies such as slum, squatter settlements and rural housing improvement programmes including community participation efforts; and indirect demand through standards and codes of practice, monetary and fiscal policy and demonstration projects, incorporation of programmes for the production of indigenous building materials in integrated rural development programmes. Suitable regional action will have to be taken to promote local factors of production for construction - notably, strengthening capabilities for regional collaboration in this field.

25. In many African countries efforts to develop indigenous building materials have not led to the wide-scale acceptance of these materials because of lack of incentives for private-sector production. The problem can be reduced through regional co-operation of member States, especially countries that experience similar difficulties in relation to mobilization of private-sector investment, in disseminating information on support and incentives from public sector to potential private-sector entrepreneurs.

26. In Africa, most of the core technologies are not yet at the stage of commercialization, more testing and/or pilot demonstration leading to the design of technical and business packages is required. The reasons for this are partly because the technologies are not fully developed and

tested technically, and partly because markets are not established. Manufacturing facilities and raw materials for making the equipment sometimes varies from year to year, being influenced by availability of foreign exchange for imports. The use of facilities is constrained by technical and management skills, spare parts and raw materials quality and availability and power supply. Regional support to international ventures is feasible in the manufacture of production equipment and in developing the market.

27. The situation can be improved by adopting a comprenensive approach at the regional level for demonstration projects covering all strategic range of local building materials, various components and activities of construction sector in order to fulfil its fundamental requirement of providing sehlter, infrastructure and services. Many of these components and activities could not have been demonstrated before now, owing to the preoccupation of national and international organizations with various short-term measures to meet urgent needs.

EXTERNAL ASSISTANCE OF OTHER ORGANIZATIONS AND UNITS WITHIN THE UNITED NATIONS SYSTEM, IGOs AND NGOs

28. Apart from the Economic Commission for Africa, other United Nations agencies as well as international organizations and non-governmental organizations have undertaken or are undertaking projects in the countries of the African region on aspects of the production and use of local building materials.

29. UNCHS (Habitat) continues to collaborate with ECA through its work programme, designed to complement relevant parts of the work programme of the regional commission. For example, a report on reformation of building codes and regulations in African countries, incorporating inputs from Ethiopia, Kenya, Uganda and the United Republic of Tanzania was published in 1986. A joint UNCHS (Habitat), India and the USSR project on transfer to African countries technology on local building materials is being implemented since 1989. UNCHS(Habitat) and the Commonwealth Science Council (CSC) undertook three joint projects in 1988-89 specifically aimed at improving the local building materials industry in Africa.

30. In addition to the regional project UNDP gives assistance to individual African countries. To meet the needs of Africa UNDP should be more involved in the regional programme on local building materials by enlarging the scale and scope of its projects. At the country level, UNDP should assist each country to achieve coherent and consistent development of their local building materials industry and make the maximum use of available technical assistance to assure the goals' achievement of the second IDDA for Africa 1991-2000.

31. ILO is currently undertaking a study of the handtools industry in Ghana. A project aimed at pioneering ILO joint action for participatory rural development has been launched in Africa. The two-year pilot project will help villagers in Senegal, Nigeria and Zimbabwe to carry out their own development activities. The resources of ILO could be tapped for training both producers and users of local building materials in the region.

32. UNIDO co-operates with Mali in establishing their first lime kiln and made preparatory work for the possible establishment of similar technology in Malawi. UNIDO has assisted in the promotion of small-to-medium-scale brick and tile plants with an appropriate balance between mechanization and labour intensiveness in Burundi, Gambia, Ghana, Lesotho, Liberia, Mali, Mauritania, Rwanda and Senegal, while existing plants in Botswana, Ethiopia and Burkina Faso have been assisted to improve performance.

33. Perhaps the most important activities could undertake FAO in rural transformation through the local production of building materials, utilization of local resources and entrepreneurs, employment generation in rural areas, and in mitigating rural-urban migration.

34. The World Bank could assist regional programme in demonstration of local building materials on some low-cost housing projects.

35. USAID has joined UNCTAD and UNVFDW in contributing to multipurpose Self-Help Village Development Project in eastern Liberia. the project aims to stimulate self-reliance and people's participation in development activities and to promote the introduction of appropriate village technologies, improved nutrition and housing, village road and bridge construction, and the creation of impoved marketing channels of locally produced commodities. UNDTCD is executing similar projects in the Central African Republic and Swaziland.

36. There exist a room for effective utilization of regional and subregional facilities. for example ARCEDEM could fabricate most of the equipment for pilot projects on local building materials. The identification of small scattered and large deposits of raw materials, by landsat imageries for the production of building materials could be sub-contracted to the Regional Centre for Services in Surveying, Mapping and Remote Sensing in Nairobi, Kenya. The African Regional Organization for Standardization (ARSO) would co-operate in the establishment of standards and specifications for improved quality control and production methods. Shelter Afrique will co-operate in assisting local entrepreneurs in establishing production facilities, and financing demonstration housing schemes.

CO-OPERATION AND CO-ORDINATION WITHIN THE UNITED NATIONS SYSTEM AND AID AGENCIES

37. External assistance in indigenous building materials sector is taking place in ad hoc manner, with little co-ordination and often in total isolation from basic regional programmes and the macro-economic policies being pursued by recipient countries. Each aid agency employs a variety of its own analytical tools and techniques of appraisal in support of building materials programme objectives and this involves the lack of consensus on regional policies and strategies and does not allow to develop a partnership approach. As a consequence there is a duplication of time-consuming and costly sector work and this frequently results in conflicting aid policies on key issues such as standards, cost recovery, subsidies and institution responsibilities. To prevent distortions and eliminate many of the drawbacks of isolated and unco-ordinated projects undertaken by many aid agencies ECA will develop a strategic approach for collaboration of various donors in a co-ordinated fashion by inviting aid agencies concerned to identify areas for action and apportioning to them priority interventions. In the case of indigenous building materials development for agricultural regions aid co-ordination, for example, could involve co-operation between agencies specializing in rural settlements development and agricultural production, thus assuring linkage and effectiveness of rural development programmes.

38. The United Nations agencies and bodies with their variety of co-ordinating and integrating mechanisms have sometimes implemented their programmes without adequate attention to specific policies in the field of local building materials development of African countries. To respond to programmes designed by African governments within the proposed new plan for economic revival, these agencies and bodies will need to improve their capacities for management and co-ordination in building materials area by developing methods and techniques to link co-operation activities to such programmes.

39. The secretariat of ECA will continue to report to the Commission on interagency building materials activities in supporting regional actions. This will provide the Commission with the information necessary to initiate co-ordinating steps. In its programme activities the Secretariat will give attention to the following issues for the acceleration of production of building materials on small-scale basis:

a) Building materials in the national economy;
b) The extent and degree of application of building materials policies for the development and use of local building materials;
c) Inventory of building materials used;
d) Low cost housing materials;
e) Raw materials availability;
f) Import substitution;

g) Existing production plants;
h) Research institutions and activities;
i) Finance and credit mechanisms;
j) Legislation;
k) Standards and codes of practice, and materials testing;
l) Consumer preferences and demand;
m) Potential for local manufacture of production equipment;
n) Potential for small scale manufacture of building materials.

The objectives and targets in each of these areas will be outlined in accordance with three mutually interdependent dimensions of the integration of the African economies and the attainment of full regional collective self-reliance, namely:

a) The integration of the physical, institutional and social infrastructures;
b) The integration of the production structures;
c) The integration of the African markets.

On the basis of these objectives and targets ECA will develop a detailed and long-term strategy for regional programme on local building materials. ECA will have to stimulate regional and national action by incorporating the strategy in its future medium-term plans and biennial work programmes.

40. ECA in consultation with other competent intergovernmental bodies could concentrate on the following measures:

a) The strengthening of regional mechanisms that provide for forward-looking co-ordination including pre-planning and pre-consultations with the United Nations agencies and bodies and with the Member States in the formulation of regional projects on local building materials;
b) The strengthening of procedures that provide for effective priority-setting. Such procedures should aim at identifying for the guidance of member States and international organizations the relative priorities to be accorded to the various components of a long-term strategy for regional programme on local building materials;
c) The improvement of regional efforts in the collection and analysis of data on local building materials development including an exchange of reports on operational activities, mission reports, etc.

41. Through regional co-ordination and co-operation joint ventures will be developed for adoption of research findings for large-scale production of local building materials, establishment of a system of support at field-implementation level through training, information dissemination and access to tools, creation of a mechanism for common use and maintenance of scare equipment. Where an individual country cannot become self-sufficient

in building materials, by reason of resource deficiency of suboptimal market threshold, consortia of adjoining countries would be promoted, based on a distribution of production facilities according to factor advantages.

Regional project for the development of building materials industries in Africa

Recalling Africa's development objectives as contained in the Lagos Plan of Action and the African Alternative Framework to Structural Adjustment Programmes for Socio-Economic Recovery and Transformation,

Reaffirming resolution 571 (XXI) on Human Settlements adopted by the United Nations Economic Commission for Africa Conference of Ministers in Yaounde, 1986 and the Programme of Action for the development of Building Materials Sector in Africa to the Year 2000, adopted by the High Level Meeting on the Development of Building Materials in Africa, Addis Ababa, April 1988.

Having considered the report of the Executive Secretary of the United Nations Economic Commission for Africa, entitled "Regional project for the development of building materials industries in Africa."

Taking into account the comments and views of delegates to the Joint Intergovernmental Regional Committee on Human Settlements and Environment at its sixth session,

Noting with satisfaction the efforts and achievements of the United Nations Economic Commission for Africa with regard to the development of building materials industries in the region,

1. Endorses the report of the Executive Secretary of the United Nations Economic Commission for Africa and requests the Executive Secretary to continue the activities of the regional project,

2. Urges African governments to formulate and implement construction sector policies and strategies in a more self-reliant direction, looking both domestically and to other African countries for markets, sources of finance and technical co-operation;

3. Also urges African governments to review the nature and kind of external assistance required to reinforce their nation-wide construction sector strategies on the principles of autonomous and non-conditional resource flows;

Requests the Executive Secretary of the United Nations Commission for Africa:

a) To develop a detailed and long-term strategy for regional programme on local building materials and incorporate its components in future medium-term plans and biennial work programmes of the Commission;

b) To elaborate a strategic approach for collaboration of various bilateral and multilateral financing institutions, and other intergovernmental and non-governmental organizations concerned in a co-ordinated fashion by inviting them to identify areas for action and apportionning to them priority interventions;

c) To strengthen a regional mechanisms that provide for forward-looking co-ordination including pre-planning and pre-consultations with the United Nations agencies and bodies and with the member States in the formulation of regional projects on local building materials;

d) To strengthen procedures that provide for effective priority setting which should aim at identifying for the guidance of member States and international organizations the relative priorities to be accorded to the various components of a long-term strategy for regional programme on local building materials;

e) To improve regional efforts in the collection and analysis of data on local building materials development including an exchange of reports on operational activities, mission reports, etc.

5. Requests United Nations agencies and organizations, bilateral and multilateral financing institutions, and other intergovernmental and non-governmental organizations concerned to review their policies and programmes in the field of building materials development in line with a new African framework for the economic policy reforms and structural adjustment programmes and to enlarge the scale and scope of their assistance to encourage and support national activities and regional actions in the construction sector development.

6. Also Requests the United Nations Development Programme (UNDP) to provide resources for the fifth funding cycle of the Regional project for the development of building materials industries in Africa for enlarging the scale and scope of the project and making the maximum use of available technical assistance to assure the goals achievement of the second IDDA for Africa 1991-2000.